DESCRIPTION OF A NEW SPECIES OF LEATHERBACK TURTLE FROM THE MIOCENE OF MARYLAND.

By William Palmer,
Of the U. S. National Museum.

During July, 1908, while Mr. D. B. Mackie and myself were searching for fossils along the Calvert Cliffs, in Calvert County, Maryland, we discovered some hard, stony plates of a peculiar nature, which puzzled us for some time. The first piece found was in a lump of wet, sandy clay at the line of high water. It stood on edge, and could only be examined, without disintegrating, on its under surface. After considerable examination and discussion, we decided that it was either a piece of crude Indian pottery or a piece of baked clay, possibly the bottom of an oven or burning place. Attention was then attracted to a larger mass of drier clay near by, which, after a few minutes of picking and cleaning, developed a similar back and edge exposure, and also an upper surface divided into many small, interlocking, flat plates, the whole being 562 mm. long and 130 mm. wide, and composed of about 100 plates. Greater interest in the find being thus excited, much of the débris was examined, with the result that many separate plates were found, and also a few pieces in which several or many were still united. An examination of the face of the cliff was then made, disclosing not only the place from whence the material had recently fallen, but also, some 30 feet above the beach, a clearly-defined section of what was evidently an inverted shell or carapace about 4 feet (1.220 mm.) across. The ends were turned upward for about 8 inches (204 mm.), and a very distinct and heavy ridge projected downward from its center. A number of steps were cut into the cliff and efforts made to get near the remains, but the treacherous nature of the wet clay and the fact that the shell was located in an overhanging portion of the cliff compelled us to abandon the attempt for a time. On another visit several days later, with tools and ropes, we were unfor-

Proceedings U. S. National Museum, Vol. XXXVI—No. 1669.

tunate enough to find that the remaining part of the shell and much of the cliff had fallen, and were mixed in fragments with the earlier débris. It became necessary, therefore, to carefully dig over all the talus material, and to wash much of it also, in order to extract the plates, which were generally separated. In this way many hundreds were recovered, together with a few broken and badly disintegrated vertebræ, ribs, and other bones, one piece only being in fair condition.

A superficial examination of this material, which required several days' labor to bring away, led to the conclusion that the remains probably belonged to a mammal resembling a *Glyptodon*, but later, on comparing the plates and the best of the bones with the skeletons of several turtles, it became clear that they represented an animal closely related to the living Leatherback Turtle, though differing in several respects.

Dermal scutes of this same species had been previously picked up from the beach bordering the cliffs by Dr. F. W. True, and later by myself, but their true nature, though often commented on, was not satisfactorily determined until the remains herein described were found.

PSEPHOPHORUS CALVERTENSIS, new species.

Dermatochelys, J. MÜLLER, Ueber die fossilen Reste der Zeuglodonten von Nord-Amerika, 1849, p. 34, pl. 27, fig. 7. Upper Eocene Zeuglodon beds of Alabama. A fragment, evidently of the plastron, comprising 13 scutes and parts of scutes.

Type-specimen.—Cat. No. 6059, U.S.N.M. (Catalogue of Fossil Vertebrates). A few bones and numerous scutes of the carapace and plastron, many joined together, collected in July, 1908, 2 miles south of Chesapeake Beach, in the Calvert Cliffs, Calvert County, Maryland, by William Palmer and David B. Mackie. From the top of the lower stratum of a Middle Miocene cliff.

Carapace composed of numerous, thick, bony scutes, mostly large; slightly, or not at all, sculptured on the dorsal surface, and generally longer than broad. One strong and prominent median, straight, longitudinal ridge, and several, perhaps six, minor parallel ridges, or thickenings of the scutes. Minor ridges but slightly raised above the adjoining scutes and seemingly decreasing in height according to their distance from the more pronounced median ridge. Scutes of the ridges about twice as long as wide, the ridge-slopes covering the whole surface of the scutes and extending over adjoining ones; not confined to the central portion of the ridge-scutes as in *P. polygonus* and *D. coriacea*. Transverse sutures generally narrower than the longitudinal sutures, and sometimes anchylosed. Plates usually very close-fitting below, almost or quite anchylosed. Under surface quite uneven, having somewhat the appearance of wet clay which has been

touched by the fingers; usually with a small pit near the center. Scutes of the outer and posterior edges much smaller and thinner than the others, and very similar to those of *D. coriacea*. Scutes of the plastron quite thick and smooth, with well-rounded outlines; those of the edge forming an undulating line. (Plate 31, fig. *F*.)

Among the best-preserved bones there is the upper half of a vertebra which is nearly perfect. It differs from a similar vertebra in *D. coriacea* principally in the size of the articular surface for the ribs, which is very much larger than in that species. Several pieces of ribs are also very similar, but one piece (fig. *A*), perhaps a tip, has very fine striations on its curved side and is smooth and reddish brown in color. The bones are light and very porous, and, consequently, many of the more prominent surfaces are badly disintegrated, a condition evidently due to the seepage of water through the stratum in which they were embedded.

On comparing our specimens with the excellent plate of the type-material of *P. polygonus* in Professor Seeley's paper,[a] and with a cleaned specimen of the carapace of *D. coriacea* in the National Museum, the differences in the ridges and shapes of the scutes were very evident. The scutes of the anterior median portion of the carapace are distinctly different in the three species, but as the outer and posterior edges are reached the scutes of the three species become quite similar. The large, thick scutes composing the anterior portion of the median ridge in *P. calvertensis* differ decidedly from similarly placed scutes in the other species. In our specimen, the ordinary scutes are flat above or nearly so, and their edges are not raised, so that the surface of any two adjoining scutes is continuous. In the lateral ridges, the rows of raised scutes are but slightly thickened and rounded along the middle (fig. *D*), and there is a tendency toward a parallel arrangement of adjoining scutes. Many of the separate scutes, as well as the larger pieces, are much waterworn and otherwise injured. It is possible that the surface was more distinctly sculptured originally, and that the sculpturing has been eroded.

Professor Seeley writes[b] that Von Meyer (1851) pointed out the striking resemblance of the carapace of *P. polygonus* to one from the zeuglodont limestone of North America which Müller had figured and compared with the dorsal shield of *Dermatochelys* [= *Dermochelys*] in his work on *Zeuglodon*. On comparing our material with Müller's excellent figure, it seems evident to me that his specimen was a part of a plastron, agreeing closely with ours in the size, shape, and general appearance of the scutes. The dominant, or more characteristic, scutes of these three species differ from each other decid-

[a] Quart. Journ. Geol. Soc., London, 36, 1880, p. 406, pl. 15.

[b] Idem, p. 407.

edly in size and shape and other particulars, but the differences are those of degree only, and as far as our present knowledge extends, the species may all be considered as belonging to the same genus.

During our many trips along the Calvert Cliffs, we found between tides several pieces of bones evidently belonging to turtles. They were all heavy and black. One piece appeared to be the central portion (about half) of a scapula, and on comparison with a scapula of *D. coriacea* would seem to belong to *P. calvertensis*. It differed from the same part in *D. coriacea* in being slenderer and flatter. The piece, 6½ inches (165 mm.) long, appears to indicate that the scapula is shorter than that of *D. coriacea*.

The following is a list of species which have been referred to *Psephophorus:*

PSEPHOPHORUS POLYGONUS Von Meyer.

Psephophorus polygonus Von Meyer, N. Jahrbuch, 1846, p. 472, and 1847, p. 579; Ber. Mit. Freund. Naturw., 1851, p. 3.—Von Hauer, Verh. k.-k. geol. Reichsanst., 1868, p. 387, and 1870, p. 342; Fuchs, Verh. k.-k. geol. Reichsanst., 1874, p. 220.—Seeley, Quart. Journ. Geol. Soc. London, 36, 1880, p. 406, pl. 15.—Woodward, Proc. Geol. Ass. London, 11, 1889, p. 13.

P[sephophorus] polygonus, Dollo, Ann. Soc. Sci. Bruxelles, 11, 1887, p. 139; Bull. Mus. Roy. Hist. Nat. Belg., 5, No. 1, 1888, p. 83.

The type-species, known only from a few bones and many scutes, from near Neudörfl, Austria, in Pliocene sandstone. Specimen, including the type material, now in the museum of the Imperial Geological Survey, Vienna. The slab of hard sandstone in which the remains are preserved is 460 mm. by 410 mm. wide.

PSEPHOPHORUS PESUDOSTRACION (Gervais).

Sphargis pseudostracion Gervais, Dict. Univ. Hist. Nat. (Ch. d'Orbigny), 11, 1848, p. 56; Zool. et Pal. Franç., 2d ed., 1859, p. 438, pl. 9, fig. 1.

P[sephophorus] (Sphargis) pseudostracion, Dollo, Bull. Mus. Roy. Hist. Nat. Belg., 5, No. 1, 1888, p. 83.

Type-locality, Vendargues, near Montpellier (Hérault), France. Miocene. First considered to be a fish, *Ostracion* sp.

PSEPHOPHORUS RUPELIENSIS (Van Beneden).

Sphargis rupeliensis Van Beneden, Bull. Acad. Roy. Belg., 3d ser., 6, (1883), p. 665.—Woodward, Proc. Geol. Ass. London, 11, 1889, p. 13.

P[sephophorus] (Sphargis) rupeliensis Dollo, Bull. Roy. Hist. Nat. Belg., 5, No. 1, 1888, p. 83.

Type-locality, Boom, Belgium. Middle Oligocene.

PSEPHOPHORUS SCALDII (Van Beneden).

Macrochelys scaldii Van Beneden, Bull. Acad. Roy. Belg., 2d ser., 31, 1871, p. 13.—Dollo, Bull. Mus. Roy. Hist. Nat. Belg., 5, No. 1, 1888, p. 75.

P[sephophorus] (Macrochelys) scaldii, Dollo, Bull. Mus. Roy. Hist. Nat. Belg., 5, No. 1, 1888, p. 83.

Type-locality, Antwerp, Belgium. Pliocene and Miocene.

PSEPHOPHORUS sp., Lydekker.

Psephophorus sp., LYDEKKER, Cat. Foss. Rept. Brit. Mus., 1889, Pt. 3, p. 224.

Sussex, England. Middle Eocene.

PSEPHOPHORUS EOCÆNUS Andrews.

Psephophorus cocænus ANDREWS, Geol. Mag., 4th ser., 8, 1901, p. 440, fig. 3; Desc. Cat. Tert. Vert. Fayûm, Egypt, 1906, p. 275.

Type-locality, Qasr-el-Sagha beds, Egypt. Middle Eocene.

EXPLANATION OF PLATE 31.

Psephophorus calvertensis.

A. Portion of a rib, probably the tip, showing striations.
B. Under side of a scute.
C, C. Under side of scutes, showing the central pit.
D. A minor lateral ridge, 9 mm. thick.
E. Portion of the medium ridge, 200 mm. long; center, 20 mm. thick; edge, 12 mm. thick.
F. Edge piece of the plastron, 135 mm. long; 10–14 mm. thick.
G. Piece of a median ridge, 155 mm. long; center, 21 mm. thick; edges, 8–11 mm. thick. Lateral view.